

Exhibit A

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Project No. \_\_\_\_\_

Book No. \_\_\_\_\_

CHEMIDIZE

Page No. \_\_\_\_\_

OBJECTIVE: TO DEVELOP A REPLACEMENT FOR THE CURRENT CHEMIDIZE T20 and T27, THAT NOT ONLY PROMOTES SUBSEQUENT COATING ADHESION, BUT GIVES STAND ALONE CORROSION PROTECTION ON ALUMINUM ALLOY 6061

EXPERIMENTAL: UNLESS OTHERWISE NOTED, THE FOLLOWING PROCEDURE WILL BE USED IN ALL EXPERIMENTS:

1. SOAK CLEAN IN ISOPREP 49 L - 5 MIN, 150°F
2. COLD WATER RINSE - 1 MIN.
3. PEOXIDIZE IN 50% NITRIC ACID - 1 MIN, Room Temp.
4. COLD WATER RINSE
5. EXPERIMENTAL CONVERSION COAT - 2 MIN.
6. COLD WATER RINSE
7. BLOW DRY
8. AGE PANEL AT AMBIENT CONDITIONS FOR 24 HOURS
9. NEUTRAL SALT SPRAY

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CHEMIDIZO

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1.5g ~~FLUO~~ HEXAFLUORO ZIRCONIUM ACIDQ.S. to 500ml  $N/H_2O$ 

2 MIN. IMMERSION @ 90°F

HOURS SALT SPRAY

	<u>pH</u>
ADJUST WITH AMMONIA	2.57
	3.10
	4.05
	5.00
	6.11

96

72

168

72

168

BEST RESULTS TO DATE!! NO VISIBLE COATING  
UPON INSPECTION. WILL TRY TO CATALYZE MORE  
SUBSTANTIVE COATING VIA ADDITION OF TUNGSTATE  
BASED ON COATING WORK WITH  $Cr^{III}$

SOLUTION STAYS CLEAR.

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LE CHEMIDIZE Project No. \_\_\_\_\_

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1.5g HEXAFLUOROZIRCONIC ACID  
1.5g SODIUM TUNGSTATE  
Q.S. ~ 500 mL H<sub>2</sub>O

2 MINUTE IMMERSION @ 90°F

	PM	HOURS	SALT SPRAY
ADJUST w/AMMONIA	2.53		192
	3.01		192
	4.00		168
	5.00		192
	6.03		144

YELLOW PPT FORMS, MAYBE DUE TO INSOLUBLE TUNGSTATE FORMATION. WILL TRY AMMONIUM TUNGSTATES TO IMPROVE STABILITY. WILL MEASURE DISSOLVED ALUMINUM ALSO TO SEE IF THIS IS ESSENTIAL TO IMPROVE SALT SPRAY PERFORMANCE.

SOLUTION STAYS CLEAR

TUNGSTEN DEFINITELY SEEMS TO CATALYZE REACTION ON ALUMINUM SURFACE. BLUE HAZE AT INTERFACE

LIGHT BLUE COATING IS EVIDENT WHEN COMPARED TO UNTREATED PANEL

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1.5g HEXAFLUOROZIRCONIC  
 1.5g AMMONIUM METATUNGSTATE  
 QS. TO 500ML W/ H<sub>2</sub>O

5 MINUTE IMMERSION

ADJUST % AMMONIA	pH	AP PPM	HOURS NEUTRAL SALT SPRAY
	2.5	8.0	288
		52.0	960
		93.0	960
		203.0	504
	3.5		
		10.0	984
		48.0	1248
		102.0	1224
		190.0	1008
	5.5		
		8.0	1008
		45.0	1128
		93.0	1224
		187.0	1224

THERE IS A VERY SIGNIFICANT RELATIONSHIP BETWEEN DISSOLVED ALUMINUM AND CORROSION PROTECTION. INCREASE IN SOLUTION CONTACT TIME DID NOT MAKE THE COATING ANY DARKER. THE CLOUD THAT FORMS AT ALUMINUM INTERFACE IS SLIGHTLY PURPLE IN COLOR USING THE AMMONIUM METATUNGSTATE AS OPPOSED TO THE SODIUM TUNGSTATE

BEST RESULTS TO DATE, OUT PERFORMS CPT

SOLUTION STABILITY IS EXCELLENT

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